MCDOWELL MOUNTAIN RANCH AQUATIC CENTER
TRAFFIC IMPACT ANALYSIS SUMMARY

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EXISTING CONDITIONS

The subject site is located on the southeast corner of Thompson Peak Parkway and McDowell Mountain Ranch Road (MMR Road). Thompson Peak Parkway is designated as a major arterial, which typically consists of three lanes in each direction. Currently the street has two lanes in each direction with an extra wide median to accommodate possible future expansion to three lanes in each direction if warranted by future traffic volumes. MMR Road is designated as minor arterial adjacent to the site. It also has two lanes in each direction with a raised median. Both of these roads have a design capacity of 35,000 vehicles per day.

Facilities: The site is currently occupied by Desert Canyon Middle and Elementary Schools and the City of Scottsdale's Arabian Library. There are three soccer and two baseball fields south of the middle school. The subject area west of these facilities along Thompson Peak Parkway is undeveloped.

Site Access: Site access is provided by Thompson Peak Parkway and MMR Road. Primary access to the site is currently provided from MMR Road via 102nd Street. Secondary access is also provided from MMR Road using 104th Street south to the school loop road, which connects 104th Street to 102nd Street around the school campus. Both of these intersections are currently unsignalized.

Traffic: Currently on Thompson Peak Parkway there are approximately 24,000 vehicles per day, and on MMR Road there are approximately 15,000 vehicles per day.

Level of Service: Level of service (abbreviated LOS) is a measure of how congested an intersection or section of roadway is under specific traffic conditions. The intersection of MMR Road and Thompson Peak Parkway experiences relatively low overall delay with the existing traffic volumes; however, for short periods of time certain traffic movements experience some significant delay. These movements are the westbound left-turn and the northbound right-turn at this intersection. This condition exists due to heavy volumes that are associated with the residential and school traffic that utilizes Thompson Park Parkway south of MMR Road to enter and leave the McDowell Mountain Ranch area.

The two unsignalized intersections of 102nd Street and 104th Street on MRR Road experience poor levels of service for the left-turn movements during the peak hours when school is in session due to the combination of high left-turn volumes exiting the site and through traffic on MMR Road.

PROPOSED DEVELOPMENT – OPTION A

The proposed development under Option A consists of an expansion of the existing Arabian library and a minor expansion of the existing park facilities that would include a small open recreation area and a playground area.

Facilites: The existing 8,400 square foot library would be expanded to an ultimate area of 25,000 square feet. The park improvements would consist of approximately two acres of improved area with grass areas for passive recreation, picnic tables, and some playground equipment.

Site Access: Access to the site would still be limited to the two intersections on MMR Road. The City of Scottsdale is planning to signalize the intersection of 102nd Street and

MMR Road to provide improved access for the school traffic. The school driveway would be widened with the construction of the signal to provide an exclusive left-turn lane. Other traffic mitigation proposed would include modifications to the intersection of MMR Road and Thompson Peak Parkway. This would consist of adding a second northbound right-turn bay and extending the westbound dual left-turn bay.

Traffic: The estimated trip generation for the proposed development under Option A is shown in the table below. This library trip generation is based on data collected at the Mustang Library. The trip generation also utilized information contained in the Institute of Transportation Engineer's *Trip Generation*, which provides trip generation estimates based on studies of similar land uses from around the United States.

Trip Generation –Option A

Land Use	Daily Total	AM Peak Hour			Pre-Peak			PM Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
Arabian Library Expansion	648	18	8	26	33	37	70	25	31	56
MMR Park Expansion	3	1	0	1	0	1	1	0	1	1
Total	651	19	8	27	33	38	71	25	32	57

The a.m. peak hour represents the highest hourly volume expected during the 7 a.m. to 9 a.m. normal rush hour period. The p.m. peak hour is the highest hourly volume expected during the 4 p.m. to 6 p.m. normal rush hour period. The pre-peak hour is the expected traffic volume during the afternoon period that coincides with the adjacent schools dismissal times.

Level of Service: These street improvements associated with the development of Option A would not only prevent the project from increasing delay, but would improve conditions over what they are today. The two critical movements at the intersection of MMR Road and Thompson Peak Parkway, the northbound right-turn movement and the westbound left-turn movement, would be improved. Access at the intersection of MMR Road and 102nd Street would be significantly improved by allowing the northbound left-turns to be made from a separate turn lane with signal control.

PROPOSED DEVELOPMENT – OPTION B

The proposed development under Option B consists of the library expansion and the development of a community park with proposed amenities such as an aquatic center, a fitness center, a skate park, playground, and open recreation areas.

Facilites: The existing 8,400 square foot library would be expanded to an ultimate area of 25,000 square feet. The aquatic center would contain a 25-yard competitive area with a leisure pool component. The fitness center would be ancillary to the pool facility. The skate park, playground, and open recreation areas would be similar to those found in other public parks within the city.

Site Access: Additional access would be provided with the development of Option B. A right-in, right-out driveway would be constructed on MMR Road between Thompson Peak Parkway and 102nd Street. Also, an additional driveway would be constructed on Thompson Peak Parkway south of MMR Road that allows the right-in, right-out, and left-in turning movements. Southbound access onto Thompson Peak Parkway would be provided by either a median opening or by constructing a loop drive under the existing bridge. Deceleration lanes would be constructed at both of these new driveways. The other mitigation measures outlined under Option A would also be constructed.

Traffic: The estimated trip generation for the proposed development under Option B is shown in the table below. This trip generation is also based on data collected at the Mustang Library and Cactus Park and contained in *Trip Generation*.

Trip Generation –Option B

Land Use	Daily Total	AM Peak Hour			Pre-Peak			PM Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
Arabian Library Expansion	648	18	8	26	33	37	70	25	31	56
MMR Park & Aquatic Ctr.	2,740	45	32	77	182	155	333	287	245	532
Total	3,388	63	40	103	215	192	403	312	276	588

Level of Service: The additional site access combined with the mitigation measures would improve conditions over what they are today. The two critical movements at the intersection of MMR Road and Thompson Peak Parkway, the northbound right-turn movement and the westbound left-turn movement, would again be improved. Access at the intersection of MMR Road and 102nd Street would be significantly improved by allowing the northbound left-turns to be made from a separate turn lane with signal control. The traffic that would be generated by the Aquatic Center would have direct access to Thompson Peak Parkway via the new site driveway. The Park traffic could be separated from the adjacent school traffic by use of a vehicular gate.

COMPARATIVE LEVELS OF SERVICE

Level of Service/Average Control Delay (in seconds)
Main Intersections

	Existing Conditions		Option A		Option B	
A.M. Peak Hour	LOS	Delay	LOS	Delay	LOS	Delay
MMR & TPP	C	21.9	C	21.2	C	21.3
MMR & 102nd	F	315.9	B	16.1	B	16.2
Pre-Peak Hour	LOS	Delay	LOS	Delay	LOS	Delay
MMR & TPP	C	26.2	C	20.3	C	20.6
MRR & 102nd	F	120.0	B	15.5	B	16.0
P.M. Peak Hour	LOS	Delay	LOS	Delay	LOS	Delay
MMR & TPP	C	32.3	C	21.9	C	22.1
MRR & 102nd	F	283.0	B	15.6	B	16.5

Level of Service/Average Control Delay (in seconds)
Critical Movements

	Existing Conditions		Option A		Option B	
A.M. Peak Hour	LOS	Delay	LOS	Delay	LOS	Delay
WB Lefts at TPP & MMR	B	17.5	B	17.4	B	17.5
NB Rights at TPP & MMR	A	8.2	A	6.0	A	5.8
NB Lefts at 102nd & MMR	F	448	C	24.3	C	24.6
Pre-Peak Hour	LOS	Delay	LOS	Delay	LOS	Delay
WB Lefts at TPP & MMR	D	37.3	B	14.8	B	15.1
NB Rights at TPP & MMR	A	9.9	A	6.2	A	6.1
NB Lefts at 102nd & MMR	F	150.9	C	24.6	C	25.9
P.M. Peak Hour	LOS	Delay	LOS	Delay	LOS	Delay
WB Lefts at TPP & MMR	E	58.3	B	14.3	B	14.8
NB Rights at TPP & MMR	B	19.9	A	7.1	A	7.0
NB Lefts at 102nd & MMR	F	342.7	C	29.7	C	26.0

Summary:
The roadway system in this area with the mitigation that is proposed will be able to handle the traffic generated by the project under either Option A or Option B with less delay than is experienced today, especially at the locations of highest congestion.